November / December, 1979

Lasca Leaves

Los Angeles County Department of Arboreta and Botanic Gardens

STUDENT INTERN PROGRAM

In its continuing efforts to support the Los Angeles State and County Arboretum in the development and maintenance of the grounds, the California Arboretum Foundation for the first time this year supplied funds for a summer Horticultural Internship Program.

In addition to assisting the Arboretum, the program is designed to give practical experience to students majoring in horticulture and related subjects as well as to provide the Arboretum with a source for future staff members.

This year the Arboretum selected five students recommended by Ronald D. Regan, head of the Department of Ornamental Horticulture, California Polytechnic University at San Luis Obispo. Participants in the 10 week course are Joseph Haslett, a junior interested in greenhouse plant production; Lori Cuesta, a senior who would like to do landscaping work for a small botanical garden; Suzy Long, a junior whose education has emphasized landscape design; and Linda Verhines and Dennis Levine, seniors interested in large-scale production of decorative foliage plants.

Each student is compensated at prevailing wages while earning six units of college credit. Besides gaining experience in various kinds of gardening work including propagation, watering, pruning, fertilizing, weeding, mowing, and constructing walks, they all had the opportunity to assist the horticultural consultant in his everyday duties. The research they did in finding answers for questions asked by the general public gave them a practical insight into the problems of home gardeners as well as the services rendered by the Arboretum.

William Aplin

Joseph Haslett

William Aplin

Lori Cuesta

William Aplin

Linda Verhines

William Aplin

Suzy Long

GUAYULE PROJECT

THE SEARCH FOR a reliable domestic source of natural rubber continues at the Arboretum with the guayule research project under the direction of Dr. George P. Hanson, principal team investigator.

Guayule *(Parthenium argentatum)* was used as a substitute for rubber from *Hevea brasiliensis* trees when Asian supplies of *Hevea* latex were disrupted during World War II. Demand for guayle rubber disappeared, however, with the increased use of synthentics in the post-war period. Natural rubber consumption has increased again in recent years because the relatively new radial tires require substantially more natural rubber than older types of tires. The increased cost of petroleum based synthetic rubber also makes natural rubber economically more attractive. Guayule as a source of natural rubber has another advantage because it is native to semi-arid regions of the southwest and can consequently be grown on land not suitable for other agricultural crops.

William Aplin

Dennis Levine

Two years ago the Arboretum received a grant for guayule research from the National Science Foundation's Research Applied to National Needs program, indicating the government's recognition of rubber as a strategic commodity in the U.S. economy. This past July Dr. Hanson and other members of the guayule research staff presented reports on project work during a two day conference with the NSF advisory committee. Committee members include representatives from several universities, rubber companies, the USDA, and local guayule research groups.

Members of the committee are Dr. H. T. Huang, NSF; Dr. Henry Yokoyama, USDA; Dr. James Bonner, Cal Tech; Dr. David Rubis, University of Arizona, Tucson; Dr. Hewitt Tysdal, early guayule breeder; Dr. Reed Rollins, Yale University; Dr. Demetrios Yermanos, University of California, Riverside; Dr. Earl Gregg, Goodrich; Al Bauman, JPL; Jack Riedel, Goodyear; Don Weihe, Firestone; and Lorin Schoene, Uniroyal.

Research has advanced along several fronts in the past year, according to Dr. Hanson. Most attention was focused on investigating the optimum cultural and greenhouse conditions for growing guayule. Plant selection and hybridization are continuing in efforts to select individual plants with vigor, maximum rubber content, cold tolerance, and a general ability to survive under different conditions. The research staff is still gathering data on variations of crosses between species regarding growth habit, branching patterns, and leaf size, shape, and texture. Results of studies on rubber analysis and anatomy will help breeders determine which plants are most suitable for propagation to increase rubber yield.

HOLIDAY CELEBRATIONS

ALL THREE GARDENS will ring in the Christmas season in their own unique ways this year.

Handmade macrame ornaments, dried flower arrangements, and a 10 foot flower stalk of the *Agave americana* decorated with golden ornaments in the Rotunda will remind Arboretum visitors of the holiday spirit. The Queen Anne Cottage, the Depot, and the Hugo Reid Adobe will also be adorned with authentic period decorations to evoke Christmases past.

At Descanso Gardens the theme for the Christmas show will be "Home for the Holidays" with the Hospitality House decorated by innovative interior designers, decorators, lighting experts, florists, and nurserymen. There will be an admission fee of $1.50 per person for

William Aplin

Each Christmas Grace Robinson (left) and Ruth Brankey add more ornaments they have made to the Arboretum Christmas collection.

The Rotunda at the Arboretum is decorated during the Holiday Season with flowering poinsettias, dried plant arrangements, and handmade macrame ornaments. The display expands each year as more decorations are completed.

the show which is open 10 a.m. to 3:30 p.m. from Dec. 1 through 9. Yule logs and other holiday items will be featured at a Christmas boutique in the Gift Shop. Proceeds from the show and boutique will provide part of the $10,000 which the Guild has pledged to contribute annually for support of the Gardens.

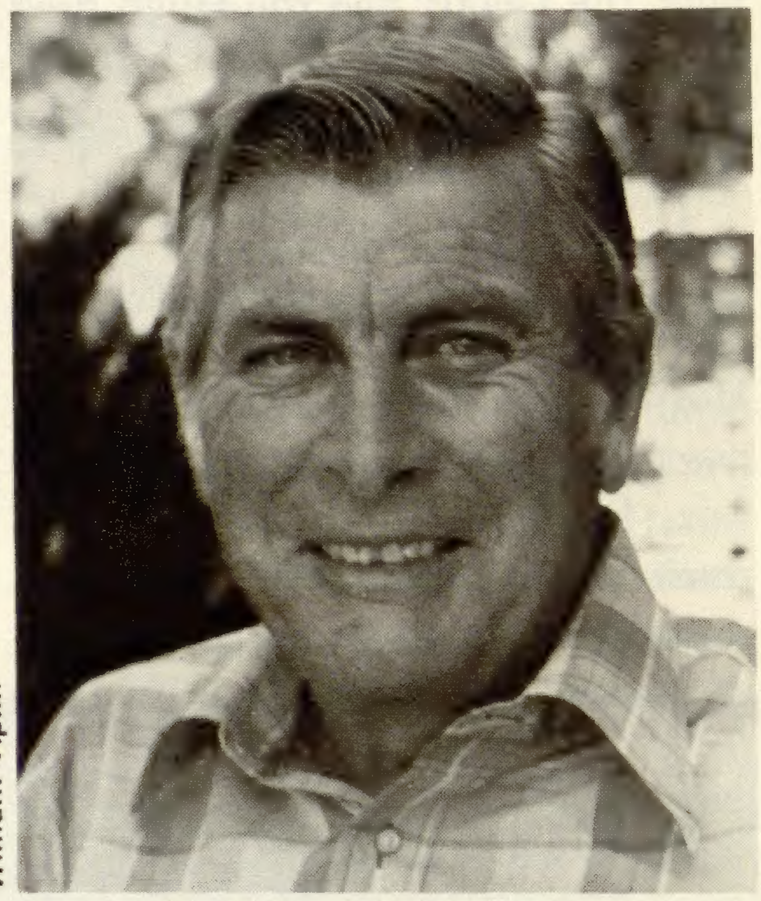
The first Sunday in December will open "Holidays in the Garden" at the South Coast Botanic Garden in Palos Verdes. The week-long display of Yuletide exhibits by local garden clubs, plant societies, and individuals in Frances Young Hall will give visitors ideas for home decorations and an opportunity to shop for unusual presents. A cup of coffee and a home-made pastry at the "Wassail Bowl" will make a fitting finale for the visit. The Palos Verdes Symphonic Band, conducted by Richard Schwalbe, will entertain at a Christmas Concert in the Garden at 2 p.m. on Dec. 16.

BROMELIAD SOCIETY HEAD

TIM LORMAN, staff horticulturist at the Arboretum, will assume his duties as president of the Bromeliad Society in January. For several years he has been active in the society, two years as second vice-president and the three previous years as a member of the board of directors. He has also served as bromeliad hybrid registration chairman.

Mr. Lorman will have a demanding schedule during his two year term as president. On a recent trip to New Orleans, La., he attended the ceremony at which newly trained bromeliad show judges received their certificates. In May he is scheduled to visit the world bromeliad conference in Orlando, Fla.

During the time he is not at his job at the Arboretum supervising the nursery and greenhouses, Mr. Lorman gives talks about bromeliads to garden clubs and plant societies. He will also be on hand at the Arboretum open house in October. These lectures support the primary public function of the bromeliad society, which is educational. "Basically, we are trying to get more and more information and books available to members and potential members," said Mr. Lorman. Current publications of the 3,200 member society include a bromeliad glossary, a cultural handbook, and an international checklist of bromeliad hybrids.



William Aplin

James P. Curry

CAF PRESIDENT

JAMES P. CURRY was elected president of the California Arboretum Foundation, a support organization for the Los Angeles State and County Arboretum. Mr. Curry was first vice-president of CAF last year and served for the previous seven years as a member of the Board of Trustees.

The Alhambra native attended Los Angeles City College and was active in the area business community for many years. Before retiring from C & H Sugar as Southern Regional Sales Manager, Industrial Products, in March of 1979, he was president of the Vernon Rotary Club, the L.A. Sales Managers' Club, and the Illuminators, a food industry organization.

Mr. Curry and his wife, Beulah, live in Arcadia and have three grown children.

Wallace L. Gwynn

Harriet (Mrs. Roger) Gurley, 1979 chairman of the Descanso Gardens Guild Christmas Show, surveys the festively decorated library in the Hospitality House.

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By LuAnn B. Munns

Cycads on the Move

THE FRIGID WINDS which bluster ashore from Lake Michigan have swept many chilled immigrants across the continent to California, enriching the Golden State with their unique qualities. One group that settled at the Los Angeles State and County Arboretum this spring contained individuals several hundred years old and from six inches to 13 feet tall. These immigrants are cycads, primitive seed-bearing plants, from the historic collection at the University of Chicago which was begun in 1904 by Professor Charles Chamberlain.

The inexorable increase during the past few years in cycad specimen size, greenhouse repairs and heating costs, as well as gardening maintenance encouraged the University to look for a new home for its cycad collection. The Arboretum with its extensive collection of cycads in the outdoor Prehistoric and Jungle Garden was selected as an ideal solution to these problems because the proper cycad growing climate can be maintained during most of the year with only the occasional use of smudge pots during unusually cold winter months.

The University's large cycad collection was obtained through the assistance of the California Arboretum Foundation, and plans for moving the cycads to Los Angeles were immediately implemented. Loran M. Whitelock, a member of the CAF Board of Trustees and an internationally recognized cycad authority, donated a week of his time for a trip to Chicago to supervise the selection, digging, and packing of the plants for shipment to the Arboretum. The cycads were soon packed into a large air-conditioned van and arrived here in early May with the frondless, bare-rooted trunks looking like an assortment of oversized brown cigars.

Two *Cycas circinalis*, each 13 feet tall, were planted in an area developed for the best display of these dramatic plants. Seven *Dioon spinu-*

William Aplin

An extensive cycad collection in the Arboretum's Prehistoric and Jungle Garden helps create the exotic atmosphere of the area.

losum, from seven to nine feet tall, and many *Ceratozamia* were interspersed among the existing cycads in the Prehistoric and Jungle Garden. Others will become part of the permanent greenhouse collection. A few cycads have put forth new fronds, but most, as befits the leisurely pace of plants that first appeared on earth 230 million years ago, are still awaiting an appropriate time to show signs of growth.

Cycads, the first seed bearing plants to evolve from the even more primitive ferns which reproduce from spores, are gymnosperms bearing their unenclosed seeds in cones, as do the more familiar pines, spruces, and firs. The dioecious cycads bear male and female cones on separate plants. Both types of cones are an aggregation of modified leaves, but the female cone is considerably larger with some seed-laden cones of *Encephalartos altensteinii* weighing as much as 90 pounds. Other large cones likely to be formed on the cycads in the Arboretum's expanded collection will be the cones of *Dioon spinulosum* which may weigh up to 30 pounds.

Cycads were a prominent plant family during the coal forming age 50 to 60 million years ago with about 35 different genera covering the globe. Cooling of the Earth's climate helped cause extinction of two-thirds of them, leaving only 10 genera containing 150 species in the subtropical and tropical portions of Mexico, Africa, Australia, Cuba and Asia. Modern cycads show little change from some of the fossil forms, earning surviving cycads the nickname of "living fossils."

Like most plants which grow slowly, cycads live for a long time. No internal growth rings form in the woody parts of the columnar types of cycads to document the passing seasons, but some botanists think it is possible to roughly determine the age of the plants by counting the diamond-shaped scars of old leaf bases that mark the armored trunks. The actual number of leaf scars divided by the number of leaves in the crown of the plant reveals the approximate number of crowns that the plant has produced. If the researcher can ascertain how often the plant produces a new crown of leaves, he can arrive at a conservative estimate of the cycad's age.

No attempt has been made to determine the age of the cycads in the Arboretum's collection, partly because estimates based on size alone can be misleading and partly because growth rates vary a great deal

William Aplin

This large Dioon spinulosum *from the University of Chicago collection displays the basal suckers and armored trunk typical of many cycads.*

among the different cycads. Dr. Chamberlain wrote during his early studies that he found a *Dioon spinulosum* with a trunk 30 feet tall may be less than 200 years old while a *Dioon edule* with a trunk only six feet tall may be more than 1,000 years old.

Cycads without visible columnar trunks make age computation almost impossible. Members of the *Zamia* genus, for instance, have subterranean turnip-like trunks which rarely appear above the surface. The cone is borne in the center of a crown of leaves emerging at ground level and is sometimes nearly as large as the trunk.

William Aplin

Two specimens of Cycas circinalis *planted in a newly developed area of the Prehistoric and Jungle Garden have been braced with guy wires until they become established.*

Zamia floridiana was one of the first cycads Dr. Chamberlain studied because, as the only cycad species found in the U.S., it was the most accessible to him. His research on the embryogeny of *Zamia* made him realize the lack of knowledge about cycads in general, so he made the first of his cycad collecting trips to Mexico in 1904. During this trip and his three later trips to that country he discovered several excellent cycad populations and made arrangements for the shipment of cones and plants to Chicago. This material provided him with specimens and information on *Dioon edule, D. spinulosum,* and *Ceratozamia mexicana.* In 1911-12 Dr. Chamberlain made his most extensive excursion for cycad material when he visited Australia, New Zealand, and South Africa to study the remaining genera and most of the species in their habitats.

His first book, *The Living Cycads,* was published in 1919 and included accounts of these botanical expeditions along with his findings on the life history and evolution of cycads. Dr. Chamberlain's book and pioneering studies stimulated so much research in this field that cycads went from a position of relative obscurity to become, 20 years later, among the best known of the gymnosperms.

His journeys also resulted in the assembly at the University of Chicago greenhouses of a cycad collection still called by the *Botanical Gazette* 31 years later "the most extensive and complete collection ever brought together."

This, then, is the same valuable collection that the winds of winter, teamed with the generosity of the University of Chicago and the financial assistance of the California Arboretum Foundation, have added to the already noteworthy collection of "living fossils" at the Arboretum.

Arboretum Gift Shop Christmas Gift Ideas

UNIQUE CRAFT ITEMS

Ivy Wreaths
"Living" Angels
Original Watercolors
Handmade Ornaments

BOTANICAL BOOKS

Exotica
Ortho Books
Exotic Plant Manual
Palms Of The World
Color For The Landscape

10% additional discount on all Christmas Craft Items

CALIFORNIA ARBORETUM FOUNDATION, INC.

CALENDAR

NOVEMBER, DECEMBER, JANUARY

LOS ANGELES STATE AND COUNTY ARBORETUM, Arcadia

NOVEMBER 3, 4—9 a.m. to 4:30 p.m.
Novice Bonsai Show
Presented by Santa Anita Bonsai Society

NOVEMBER 9—8 p.m.
Lecture, "Appropriate California Natives for Landscaping"
John Dourley, superintendent, Rancho Santa Ana Botanic Garden
Presented by Theodore Payne Foundation

NOVEMBER 18—2 p.m.
Sunday Afternoon Talk
"Culture and Identification of Ferns"
Tim Lorman, Arboretum horticulturist
Presented by California Arboretum Foundation

DECEMBER 8, 9—9 a.m. to 4:30 p.m.
Camellia Show
Presented by Camellia Council

JANUARY 6—9 a.m. to 4:30 p.m.
Gladiolus Bulb Sale
Presented by Southern California Gladiolus Society

JANUARY 11—8 p.m. to 10 p.m.
Lecture, "Native Plants"
Presented by Theodore Payne Foundation

JANUARY 26, 27—9 a.m. to 4:30 p.m.
Bonsai Show
Presented by Baikoen Bonsai Kenyukai Society

DESCANSO GARDENS, La Canada

NOVEMBER 3, 4—9 a.m. to 5 p.m.
Chrysanthemum Show
Presented by Glendale Chrysanthemum Society

NOVEMBER 4—2 p.m.
Sunday Afternoon Talk
"Composting"
George Lewis, superintendent
Presented by Descanso Gardens Guild

DECEMBER 1 thru 9—10 a.m. to 3:30 p.m.
Christmas Show
Presented by Descanso Gardens Guild

JANUARY 13—1 p.m. to 4 p.m.
Rose Pruning Demonstration
George Lewis, superintendent
Presented by Pacific Rose Society

SOUTH COAST BOTANIC GARDEN, Palos Verdes Peninsula

NOVEMBER 4—10 a.m.
Sunday Morning Walk
"Australian Natives"
Edward Hartnagel, assistant supt.
Presented by South Coast Botanic Garden Foundation

NOVEMBER 4—2 p.m.
"Trees for Small Yards, Patios and Pool Areas"
Eric Lorimore, nurseryman
Presented by South Coast Botanic Garden Foundation

NOVEMBER 11—2 p.m.
Wreathmaking Demonstration
Suzy Seamans
Presented by South Coast Botanic Garden Foundation

DECEMBER 2 thru 9—10 a.m. to 5 p.m.
"Holidays in the Garden" Exhibit
Presented by South Coast Botanic Garden Foundation

DECEMBER 15—2:00 p.m.
Christmas Concert
Palos Verdes Symphonic Band
Richard Schwalbe, conductor
Presented by South Coast Botanic Garden Foundation

JANUARY 20—2 p.m.
Sunday Afternoon Talk
"Pruning Deciduous Fruit Trees"
Armand Sarinana, superintendent
Presented by South Coast Botanic Garden Foundation